IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Eric L. Barsness, et al.	Examiner:	Michael J Hicks
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APPEAL BRIEF
TO THE BOARD OF PATENT APPEALS AND INTERFERENCES OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

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This brief is presented in support of the Notice of Appeal filed on December 26, 2007, from the Final Rejection of claims 1-2, 6-9, 11-14, 16-17, and 20 of the above-identified application, as set forth in the Final Office Action mailed on September 25, 2007.

Please charge $510.00 to Deposit Account 09-0465 to cover the fee for filing an appeal brief. Please charge any additional fees or credit overpayment to Deposit Account 09-0465. Appellant respectfully requests reversal of the Examiner's rejection of pending claims 1-2, 6-9, 11-14, 16-17, and 20.

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1. Real Party in Interest

The real party in interest, in addition to the inventors, Eric L. Barsness, Randy W. Ruhlow, and John M. Santosuosso, is the assignee, International Business Machines Corporation, a corporation organized and existing under and by virtue of the laws of the State of New York, and having an office and place of business at New Orchard Road, Armonk, New York 10504.

2. Related Appeals and Interferences

There are no other prior or pending appeals, interferences, or judicial proceedings, which may be related to, directly affect or be directly affected by, or have a bearing on the Board's decision.

3. Status of Claims

On December 26, 2007, appellant appealed from the final rejection of claims 1-2, 6-9, 11-14, 16-17, and 20 made in the Final Office Action dated September 25, 2007. Claims 3-5, 10, 15, and 18-19 were canceled without prejudice or disclaimer. Finally rejected claims 1-2, 6-9, 11-14, 16-17, and 20 on appeal are set forth in the Claims Appendix.

4. Status of Amendments

Subsequent to the Final Office Action dated September 25, 2007, appellant did not file any amendments.

5. Summary of Claimed Subject Matter

An embodiment of the invention is described, by way of example and not of limitation, in appellant's specification at page 2, lines 8-27, at page 3, lines 1-12, at Fig. 1, elements 100, 102, 110, 115, 126, 128, 130, and 132, at Fig. 2, elements 130 and 240, at Fig. 3, elements 305, 310, 315, 320, 325, 330, 335, and 340, and at Fig. 4, elements 405, 410, and 415, which recite:

"A method, apparatus, system, and signal-bearing medium are provided that in an embodiment track a history of statements that query data from a database. When a new statement is received, the history is searched for a correlation between the new statement and previous statements. The correlation is based on host variables in the history and the new statement. When a correlation is found, a prediction is made for the next statement to be received based on the previous statement in the history for which the correlation was found. The prediction is then used to retrieve pages from the database into a cache, which may be used by a subsequent statement.

An embodiment of the invention includes a method comprising: finding a correlation between a first statement and a previous statement; predicting a second statement based on the previous statement; and retrieving at least one page from a database based on the second statement.

Another embodiment of the invention includes an apparatus comprising: means for finding a correlation between a first statement and a previous statement, wherein the previous statement is stored in a history of a plurality of statements; means for predicting a second statement based on the previous statement; and means for retrieving at least one page from a database based on the second statement.

Another embodiment of the invention includes a signal-bearing medium encoded with instructions, wherein the instructions when executed comprise: finding a correlation between a first statement and a previous statement, wherein the previous statement is stored in a history of a plurality of statements; predicting a second statement based on the previous statement; executing the first statement against a database; and retrieving at least one page from the database based on the second statement.

Another embodiment of the invention includes a server comprising: a processor; and a storage device encoded with instructions, wherein the instructions when executed on the processor comprise: finding a correlation between a first statement and a previous statement, wherein the previous statement is stored in a history of a plurality of statements, and wherein the finding the correlation further comprises finding a host variable in a history that matches the host variable in the first statement, predicting a second statement based on the previous statement, executing the first statement against the database, and retrieving at least one page from a database based on the second statement."

With reference to claim 1, an embodiment of the invention comprises a method, which is described, by way of example and not of limitation, in the specification, at page 2, line 8, at page 6, lines 1-6, at page 11, lines 23-29, at page 12, lines 1-29, at page 13, lines 1-27, at Fig. 3, elements 305, 310, 315, 320, 325, 330, 335, and 340, and at Fig. 4, elements 405, 410, and 415.

With further reference to claim 1, the method comprises: finding a correlation between a first statement and a previous statement, wherein the finding the correlation further comprises finding a host variable in the previous statement in a history that matches a host variable in the first statement, wherein first data supplied for the host variable in the first statement matches previous data associated with the host variable in the previous statement, wherein the host variable in the previous statement and the host variable in the first statement comprise a variable in a host language that is set to a plurality of values in succession and submitted to a database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-19, at page 5, lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 1-15, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 240, 245, and 255, and at Fig. 3, elements 305, 310, 315, and 320.

With further reference to claim 1, the method comprises: predicting a second statement based on the previous statement, wherein the predicting further comprises finding the previous statement in the history and finding the second statement that was next in time following the previous statement in the history, wherein the previous statement and the second statement comprise commands that were previously executed against the database,

which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-19, at page 5, lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 1-25, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, 240, 245, and 255, and at Fig. 3, elements 310, 315, 320, and 325.

With further reference to claim 1, the method comprises: retrieving at least one page from the database based on the second statement, wherein the retrieving further comprises executing the second statement against the database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-19, at page 5, lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-22, at page 12, lines 26-28, at page 13, lines 16-22, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, and 240, at Fig. 3, element 330, and at Fig. 4, elements 405 and 410.

With reference to claim 2, the retrieving further comprises: retrieving the at least one page asynchronously from executing the first statement against the database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-19, at page 5, lines 16-29, at page 12, lines 26-29, at page 13, lines 1-8 and 16-22, at page 15, lines 10-12, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 3, elements 330 and 340, and at Fig. 4, elements 405 and 410.

With further reference to claim 2, the retrieving further comprises: storing the at least one page in a cache, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15, at page 5, lines 25-28, at page 13, lines 19-24, at Fig. 1, elements 102, 110, 115, 128, and 132, and at Fig. 4, elements 410 and 415.

With reference to claim 6, an embodiment of the invention comprises: an apparatus comprising various means, which are described, by way of example and not of limitation, in the specification at page 2, lines 8 and 20, at page 3, lines 25-27, at page 4, lines 1-30, at page 5, lines 1-15, at page 6, lines 1-30, at page 7, lines 1-19, at page 8, lines 12-30, at page 9, lines 1-2, and at Fig. 1, elements 100, 102, 110, 115, 120, 122, 125, and 128, which, in pertinent part, recite:

"A method, apparatus, system, and signal-bearing medium are provided

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Another embodiment of the invention includes an apparatus comprising: means

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Referring to the Drawing, wherein like numbers denote like parts throughout the several views, Fig. 1 depicts a block diagram of an example system 100 for implementing an embodiment of the invention. The system 100 includes an electronic device 102 connected to a client 104 via a network 108. Although only one electronic device 102, one client 104, and one network 108 are shown, in other embodiments any number or combination of them may be present. Although the electronic device 102, the client 104, and the network 108 are illustrated in Fig. 1 as being discrete, separate components, in other embodiments some or all of their functions and elements may be combined.

In an embodiment, the electronic device 102 functions as a server. The electronic device 102 includes a processor 110, a storage device 115, an input device 120, and an output device 122, all connected directly or indirectly via a bus 125. The processor 110 represents a central processing unit of any type of architecture, such as a CISC (Complex Instruction Set Computing), RISC (Reduced Instruction Set Computing), VLIW (Very Long Instruction Word), or a hybrid architecture, although any appropriate processor may be used. The processor 110 executes instructions and includes that portion of the electronic device 102 that controls the operation of the entire electronic device. Although not depicted in Fig. 1, the processor 110 typically includes a control unit that organizes data and program storage in memory and transfers data and other information between the various parts of the electronic device 102. The processor 110 reads and/or writes code and data to/from the storage device 115, the network 108, the input device 120, and/or the output device 122.

Although the electronic device 102 is drawn to contain only a single processor 110 and a single bus 125, embodiments of the present invention apply equally to electronic devices that may have multiple processors and multiple buses with some or all performing different functions in different ways.

The storage device 115 represents one or more mechanisms for storing data. For example, the storage device 115 may include read only memory (ROM), random access

memory (RAM), magnetic disk storage media, optical storage media, flash memory devices, and/or other machine-readable media. In other embodiments, any appropriate type of storage device may be used. Although only one storage device 115 is shown, multiple storage devices and multiple types of storage devices may be present. Although the storage device 115 is shown in Fig. 1 as a single monolithic entity, the storage device 115 may in fact be distributed and/or hierarchical, as is known in the art. For example, the storage device 115 may exist in multiple levels of storage devices, and these levels of storage devices may be further divided by function, so that one level of storage device holds, e.g., instructions while another holds, e.g., non-instruction data which is used by the processor or processors. The storage device 115 may further be distributed and associated with different processors or sets of processors, as is known in any of various so-called non-uniform memory access (NUMA) computer architectures. Further, although the electronic device 102 is drawn to contain the storage device 115, it may be distributed across other electronic devices, such as electronic devices connected to the network 108.

The storage device 115 includes a database 126, a controller 128, history data 130, and a cache 132, all of which may in various embodiments have any number of instances. Although the database 126, the controller 128, the history data 130, and the cache 132 are all illustrated as being contained within the storage device 115 in the electronic device 102, in other embodiments some or all of them may be on different electronic devices and may be accessed remotely, e.g., via the network 108.

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In an embodiment, the controller 128 includes instructions capable of executing on the processor 110 or statements capable of being interpreted by instructions executing on the processor 110 to carry out the functions as further described below with reference to Figs. 3 and 4. In another embodiment, the controller 128 may be implemented in hardware via logic gates and/or other appropriate hardware techniques in lieu of or in addition to a processor-based system.

The input device 120 may be a keyboard, mouse or other pointing device, trackball, touchpad, touchscreen, keypad, microphone, voice recognition device, or any other

appropriate mechanism for the user to input data to the electronic device 102 and/or to manipulate the user interfaces of the electronic device 102. Although only one input device 120 is shown, in another embodiment any number and type of input devices may be present. The input device 120 may be used to interact with and manipulate the user interfaces of the electronic device 102, if any.

The output device 122 is that part of the electronic device 102 that presents output to the user. The output device 122 may be a cathode-ray tube (CRT) based video display well known in the art of computer hardware. But, in other embodiments the output device 122 may be replaced with a liquid crystal display (LCD) based or gas, plasma-based, flat-panel display. In still other embodiments, any appropriate display device may be used. In other embodiments, a speaker or a printer may be used. In other embodiments any appropriate output device may be used. Although only one output device 122 is shown, in other embodiments, any number of output devices of different types or of the same type may be present. The output device 122 may display or otherwise present the user interfaces of the electronic device 102, if any.

The bus 125 may represent one or more busses, e.g., PCI (Peripheral Component Interconnect), ISA (Industry Standard Architecture), X-Bus, EISA (Extended Industry Standard Architecture), or any other appropriate bus and/or bridge (also called a bus controller). Although the bus 125 is shown in Fig. 1 as a relatively simple, single bus structure providing a direct communication path among the processor 110, the storage device 115, the input device 120, and the output device 122, in other embodiments the bus 125 may comprise multiple different buses or communication paths, which may be arranged in any of various forms, such as point-to-point links in hierarchical, star or web configurations, multiple hierarchical buses, or parallel and redundant paths. Furthermore, while the bus 125 is shown directly connected to the processor 110, the storage device 115, the input device 120, and the output device 122, in other embodiments, some or all of the I/O (Input/Output) devices may be connected via I/O processors.

The electronic device 102 may be implemented using any suitable hardware and/or software, such as a personal computer. Portable computers, laptop or notebook computers, PDAs (Personal Digital Assistants), pocket computers, telephones, pagers, automobiles,

teleconferencing systems, appliances, and mainframe computers are examples of other possible configurations of the electronic device 102. The hardware and software depicted in Fig. 1 may vary for specific applications and may include more or fewer elements than those depicted. For example, other peripheral devices such as audio adapters, or chip programming devices, such as EPROM (Erasable Programmable Read-Only Memory) programming devices may be used in addition to or in place of the hardware already depicted.

The client 104 may be an electronic device including hardware and optional software components analogous to the electronic device 102 previously described above. The client 104 sends requests for information to the electronic device 102 and receives responses from the electronic device 102.

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The various software components illustrated in Fig. 1 and implementing various embodiments of the invention may be implemented in a number of manners, including using various computer software applications, routines, components, programs, objects, modules, data structures, etc., referred to hereinafter as "computer programs," or simply "programs." The computer programs typically comprise one or more instructions that are resident at various times in various memory and storage devices in the electronic device 102, and that, when read and executed by one or more processors in the electronic device 102, cause the electronic device to perform the steps necessary to execute steps or elements embodying the various aspects of an embodiment of the invention.

Moreover, while embodiments of the invention have and hereinafter will be described in the context of fully functioning electronic devices, the various embodiments of the invention are capable of being distributed as a program product in a variety of forms, and the invention applies equally regardless of the particular type of signal-bearing medium used to actually carry out the distribution. The programs defining the functions of this embodiment may be delivered to the electronic device 102 via a variety of signal-bearing media, which include, but are not limited to:

(1) information permanently stored on a non-rewriteable storage medium, e.g., a read-only memory device attached to or within an electronic device, such as a CD-ROM readable by a CD-ROM drive;

(2) alterable information stored on a rewriteable storage medium, e.g., a hard disk drive or diskette."

With further reference to claim 6, the various means comprise: means for finding a correlation between a first statement and a previous statement, wherein the previous statement is stored in a history of a plurality of statements, wherein the finding the correlation further comprises finding a host variable in the previous statement in the history that matches a host variable in the first statement, wherein first data supplied for the host variable in the first statement matches previous data associated with the host variable in the previous statement, wherein the host variable in the previous statement and the host variable in the first statement comprise a variable in a host language that is set to a plurality of values in succession and submitted to a database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15 and 20-24, at page 5, lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 1-15, at Fig. 1, elements 102, 110, 115, 126, 128 and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 240, 245, and 255, and at Fig. 3, elements 305, 310, 315, and 320.

With further reference to claim 6, the various means comprise: means for predicting a second statement based on the previous statement, wherein the means for predicting further comprises means for finding the second statement that was next in time following the previous statement in the history, wherein the previous statement and the second statement comprise commands that were previously executed against the database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15 and 20-24, at page 5, lines 16-27, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 1-25, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, 240, 245, and 255, and at Fig. 3, elements 310, 315, 320, and 325.

With further reference to claim 6, the various means comprise: means for retrieving at least one page from the database based on the second statement, wherein the means for

retrieving further comprises means for executing the second statement against the database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15 and 20-24, at page 5, lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-22, at page 12, lines 26-28, at page 13, lines 16-22, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, and 240, at Fig. 3, element 330, and at Fig. 4, elements 405 and 410.

With reference to claim 7, the apparatus further comprises means for saving the first statement in the history, which is described, by way of example and not of limitation, in the specification, at page 5, lines 10-11 and 25, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-22, at page 12, lines 28-29, at page 13, lines 1-2, at Fig. 1, elements 102, 110, 115, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, and 255, and at Fig. 3, element 335.

With reference to claim 8, the means for retrieving further comprises: means for retrieving the at least one page asynchronously from executing the first statement against the database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15 and 20-24, at page 5, lines 16-24, at page 12, lines 26-29, at page 13, lines 1-8 and 16-22, at page 16, lines 6-7, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 3, elements 330 and 340, and at Fig. 4, elements 405 and 410.

With further reference to claim 8, the means for retrieving further comprises: means for storing the at least one page in a cache, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15, at page 5, lines 25-28, at page 13, lines 16-24, at Fig. 1, elements 102, 110, 115, 128, and 132, and at Fig. 4, elements 405, 410, and 415.

With reference to claim 9, the apparatus further comprises: means for executing a next statement against the cache, wherein the next statement follows the first statement in time, and wherein a host variable in the next statement matches the host variable in the second statement, which is described, by way of example and not of limitation, in the specification, at page 5, lines 10-11 and 25-28, at page 11, lines 25-29, at page 13, lines 3-13, at page 16, lines 10-13, at Fig. 1, elements 102, 110, 115, 128, and 132, and at Fig. 3, elements 305 and 340.

With reference to claim 11, an embodiment of the invention comprises a storage device encoded with instructions, wherein the instructions when executed, which is described, by way of example and not of limitation, in appellant's specification at page 4, lines 23-30, at page 5, lines 1-15, at page 6, lines 1-4, at page 8, lines 12-30, at page 9, lines 1-2, and at Fig. 1, elements 102, 110, 115, and 128.

With further reference to claim 11, the instructions when executed comprise: finding a correlation between a first statement and a previous statement, wherein the previous statement is stored in a history of a plurality of statements, wherein the finding the correlation further comprises finding a host variable in the previous statement in the history that matches a host variable in the first statement, wherein first data supplied for the host variable in the first statement matches previous data associated with the host variable in the previous statement, wherein the host variable in the previous statement and the host variable in the first statement comprise a variable in a host language that is set to a plurality of values in succession and submitted to a database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15 and 25-27, at page 3, lines 1-3, at page 5, lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 1-15, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 240, 245, and 255, and at Fig. 3, elements 305, 310, 315, and 320.

With further reference to claim 11, the instructions when executed comprise: predicting a second statement based on the previous statement, wherein the predicting further comprises finding the second statement that was next in time following the previous statement in the history, wherein the previous statement and the second statement comprise commands that were previously executed against the database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15, at page 3, lines 1-2, at page 5, lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 1-25, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, 240, 245, and 255, and at Fig. 3, elements 305, 310, 315, 320, and 325.

With further reference to claim 11, the instructions when executed comprise: executing the first statement against the database, which is described, by way of example and

not of limitation, in the specification, at page 5, lines 16-24, at page 13, lines 1-8, at Fig. 1, elements 102, 110, 115, 126, and 128, and at Fig. 3, element 340.

With further reference to claim 11, the instructions when executed comprise: retrieving at least one page from the database based on the second statement, wherein the retrieving further comprises executing the second statement against the database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15, at page 3, lines 1-3, at page 5, lines 16-24, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-22, at page 12, lines 26-28, at page 13, lines 16-22, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, and 240, at Fig. 3, element 330, and at Fig. 4, elements 405 and 410.

With reference to claim 12, the retrieving further comprises: retrieving the at least one page asynchronously from the executing the first statement, which is described, by way of example and not of limitation, in the specification, at page 3, lines 1-3, at page 5, lines 16-24, at page 12, lines 26-29, at page 13, lines 1-8 and 16-22, at page 16, lines 29-30, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 3, elements 330 and 340, and at Fig. 4, elements 405 and 410.

With reference to claim 13, an embodiment of the invention further comprises: storing the at least one page in a cache, which is described, by way of example and not of limitation, in the specification, at page 5, lines 25-29, at page 13, lines 16-24, at Fig. 1, elements 102, 110, 115, 128, and 132, and at Fig. 4, elements 405, 410, and 415.

With reference to claim 14, an embodiment of the invention further comprises: executing a next statement against the cache, wherein the next statement follows the first statement in time, and wherein a host variable in the next statement matches the host variable in the second statement, which is described, by way of example and not of limitation, in the specification, at page 11, lines 24-25, at page 13, lines 3-13, at page 17, lines 4-7, at Fig. 1, elements 102, 110, 115, 128, and 132, and at Fig. 3, elements 305 and 340.

With reference to claim 16, an embodiment of the invention comprises a server, which is described, by way of example and not of limitation, in appellant's specification at page 3, lines 4 and 27, at page 4, lines 6-30, at page 5, lines 1-15, at page 6, lines 1-30, at

page 7, lines 1-15, at page 8, lines 12-30, at page 9, lines 1-2, and at Fig. 1, elements 102, 110, 115, 120, 122, and 125.

With further reference to claim 16, the server comprises a processor, which is described, by way of example and not of limitation, in appellant's specification at page 3, line 4, at page 4, lines 6-22, at page 5, lines 1-6, at page 6, lines 1-6 and 28, at page 7, lines 1-5, at page 8, line 18, at page 9, lines 6-8, and at Fig. 1, elements 102 and 110.

With further reference to claim 16, the server comprises a storage device encoded with instructions, wherein the instructions when executed on the processor, which is described, by way of example and not of limitation, in appellant's specification at page 3, lines 4-6, at page 4, lines 6-30, at page 5, lines 1-15, at page 6, lines 1-4, at page 8, lines 12-30, at page 9, lines 1-2 and 6-8, and at Fig. 1, elements 102, 110, 115, and 128.

With further reference to claim 16, the instructions when executed on the processor comprise: finding a correlation between a first statement and a previous statement, wherein the previous statement is stored in a history of a plurality of statements, and wherein the finding the correlation further comprises finding a host variable in the previous statement in the history that matches the host variable in the first statement, wherein first data supplied for the host variable in the first statement matches previous data associated with the host variable in the previous statement, wherein the host variable in the previous statement and the host variable in the first statement comprise a variable in a host language that is set to a plurality of values in succession and submitted to a database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15, at page 3, lines 4-12, at page 5, lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 1-15, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 240, 245, and 255, and at Fig. 3, elements 305, 310, 315, and 320.

With further reference to claim 16, the instructions when executed on the processor comprise: predicting a second statement based on the previous statement, wherein the predicting further comprises finding the second statement that was next in time following the previous statement in the history, wherein the previous statement and the second statement comprise commands that were previously executed against the database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-19, at page 5,

lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 1-25, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, 240, 245, and 255, and at Fig. 3, elements 305, 310, 315, 320, and 325.

With further reference to claim 16, the instructions when executed on the processor comprise: executing the first statement against the database, which is described, by way of example and not of limitation, in the specification, at page 5, lines 16-29, at page 13, lines 1-8, at Fig. 1, elements 102, 110, 115, 126, and 128, and at Fig. 3, element 340.

With further reference to claim 16, the instructions when executed on the processor comprise: retrieving at least one page from a database based on the second statement, wherein the retrieving further comprises executing the second statement against the database, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-19, at page 5, lines 16-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 26-28, at page 13, lines 16-22, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, and 240, at Fig. 3, element 330, and at Fig. 4, elements 405 and 410.

With further reference to claim 16, the instructions when executed on the processor comprise: storing the at least one page in a cache, which is described, by way of example and not of limitation, in the specification, at page 5, lines 25-29, at page 13, lines 16-24, at Fig. 1, elements 102, 110, 115, 128, and 132, and at Fig. 4, elements 405, 410, and 415.

With further reference to claim 16, the instructions when executed on the processor comprise: executing a next statement against the at least one page in the cache, wherein the next statement follows the first statement in time, and wherein the host variable in the next statement matches the host variable in the second statement, which is described, by way of example and not of limitation, in the specification, at page 13, lines 3-13, at page 17, lines 4-7, at Fig. 1, elements 102, 110, 115, 128, and 132, and at Fig. 3, elements 305 and 340.

With reference to claim 17, the retrieving further comprises: retrieving the at least one page asynchronously from the executing the first statement, which is described, by way of example and not of limitation, in the specification, at page 2, lines 8-15, at page 3, lines 4-12, at page 5, lines 16-29, at page 12, lines 26-29, at page 13, lines 1-8 and 16-22, at page 17,

lines 27-28, at Fig. 1, elements 102, 110, 115, 126, 128, and 130, at Fig. 3, elements 330 and 340, and at Fig. 4, elements 405 and 410.

With reference to claim 20, the finding the correlation further comprises: finding the previous statement, wherein the previous statement is associated with a same job as the first statement, which is described, by way of example and not of limitation, in the specification, at page 3, lines 4-12, at page 5, lines 25-29, at page 9, lines 17-29, at page 10, lines 1-28, at page 11, lines 1-29, at page 12, lines 1-15, at Fig. 1, elements 102, 110, 115, 128, and 130, at Fig. 2, elements 130, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, and 255, and at Fig. 3, elements 310, 315, and 320.

6. Grounds of Rejection to be Reviewed on Appeal

1. Whether claims 1-2, 6-9, 11-14, 16-17, and 20 are unpatentable under 35 U.S.C. 102(b) over Sapia ("On Modeling and Predicting Query Behavior in OLAP Systems").

7. Argument

A) The Applicable Law

Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *In re Dillon* 919 F.2d 688, 16 USPQ 2d 1897, 1908 (Fed. Cir. 1990) (en banc), cert. denied, 500 U.S. 904 (1991). It is not enough, however, that the prior art reference discloses all the claimed elements in isolation. Rather, "[a]nticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, *arranged as in the claim*." *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP § 2131.

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). To do that the Examiner must show that some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art would lead an individual to combine the relevant teaching of the references. *Id.*

The *Fine* court stated that:

> Obviousness is tested by "what the combined teaching of the references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 878 (CCPA 1981). But it "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." *ACS Hosp. Sys.*, 732 F.2d at 1577, 221 USPQ at 933. And "teachings of references can be combined *only* if there is some suggestion or incentive to do so." *Id.* (emphasis in original).

The M.P.E.P. adopts this line of reasoning, stating that

> In order for the Examiner to establish a *prima facie* case of obviousness, three base criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation

> of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir. 1991)).

An invention can be obvious even though the suggestion to combine prior art teachings is not found in a specific reference. *In re Oetiker*, 24 USPQ2d 1443 (Fed. Cir. 1992). At the same time, however, although it is not necessary that the cited references or prior art specifically suggest making the combination, there must be some teaching somewhere which provides the suggestion or motivation to combine prior art teachings and applies that combination to solve the same or similar problem which the claimed invention addresses. One of ordinary skill in the art will be presumed to know of any such teaching. (See, e.g., *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) and *In re Wood*, 599 F.2d 1032, 1037, 202 USPQ 171, 174 (CCPA 1979)).

A factor cutting against a finding of motivation to combine or modify the prior art is when the prior art teaches away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963).

If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); MPEP § 2143.01.

The test for obviousness under § 103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985). Furthermore, claims must be interpreted in light of the specification, claim language, other claims and prosecution history. *Panduit Corp. v.*

Dennison Mfg. Co., 810 F.2d 1561, 1568, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987), *cert. denied*, 481 U.S. 1052 (1987). At the same time, a prior patent cited as a § 103 reference must be considered in its entirety, "*i.e.* as a *whole*, including portions that lead away from the invention." *Id.* That is, the Examiner must, as one of the inquiries pertinent to any obviousness inquiry under 35 U.S.C. § 103, recognize and consider not only the similarities but also the critical differences between the claimed invention and the prior art. *In re Bond*, 910 F.2d 831, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990), *reh'g denied*, 1990 U.S. App. LEXIS 19971 (Fed. Cir. 1990). Finally, the Examiner must avoid hindsight. *Id.*

As explained in M.P.E.P. § 2112, the express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. But, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). Further, "[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

B) Discussion of the Rejections

1. Claims 1-2, 6-9, 11-14, 16-17, and 20 are rejected under 35 U.S.C. 102(b) over Sapia ("On Modeling and Predicting Query Behavior in OLAP Systems"), hereinafter "Sapia."

Claims 1-2, 6-9, 11-14, 16-17, and 20

Applicant respectfully submits that the claims are patentable over Sapia because Sapia does not teach or suggest all of the elements of the claims, for the reasons argued below.

Claim 1 recites: "finding a host variable in the previous statement in a history that matches a host variable in the first statement, wherein first data supplied for the host variable in the first statement matches previous data associated with the host variable in the previous

statement, wherein the host variable in the previous statement and the host variable in the first statement comprise a variable in a host language that is set to a plurality of values in succession and submitted to a database."

The Examiner relies on "pages 6-7," "section 4.2," and "definitions 4.6" for the host variables of claim 1, argues that "attributes" teach the host variables, and argues that, in Sapia, "the correlation (e.g., distance) between current user queries and queries in the profile are calculated using host variables (e.g., attributes)". Applicant respectfully disagrees for the following reasons.

First, Sapia at section 4.2, pages 2-6 and 2-7, and definitions 4.6 does not teach or suggest "attributes." Instead, Sapia describes that "two sessions have a common pattern if they contain similar queries," and similarity of queries is defined by "a distance measure that corresponds to the number of user interactions minimally needed to transform the query prototype of query q_1 to the prototype of q_2," as recited in Sapia section 4.2, first full paragraph.

Second, the Sapia distance is not calculated based on host variables and is not calculated based on "attributes." Instead, the Sapia distance is calculated based on "the number of user interactions minimally needed to transform the query prototype of query q_1 to the prototype of q_2," as recited in Sapia section 4.2, first full paragraph. Thus, the Sapia distance is calculated based on a number of user interactions and not on "attributes."

Finally, the Sapia distance does not teach or suggest "a variable in a host language that is set to a plurality of values in succession and submitted to a database," as recited in claim 1 because the Sapia distance is the number of operations needed to transform query prototypes, as described in Sapia at page 2-4, last full paragraph and not a variable in a host language set to a plurality of values in succession, as recited in claim 1.

Claim 1 further recites: "predicting a second statement based on the previous statement, wherein the predicting further comprises finding the previous statement in the history and finding the second statement that was next in time following the previous statement in the history, wherein the previous statement and the second statement comprise commands that were previously executed against the database."

Thus, claim 1 predicts the second statement by finding it next in time following the previous statement in the history, and the previous statement has a correlation to the first statement, where the previous statement and the second statement comprise commands previously executed against a database.

In contrast, Sapia performs its prediction based on "the status of the current session (the queries asked so far) and the profile information," as described in Sepia on page 2-9, first partial paragraph, which does not teach or suggest "finding the previous statement in the history and finding the second statement that was next in time following the previous statement in the history," as recited in claim 1. In addition, Sapia does not teach or suggest "finding the second statement that was next in time ... in the history" because Sapia "generates queries that are most likely to be asked next" (Sapia at 2-9, first column) instead of finding the second statement in the history, as recited in claim 1. Further, the Sapia generated query is not next in time because Sapia "estimates their probability" making "use of the distance measure" (Sapia at 2-9, first column) and this Sapia distance measure is based on a number of user interactions and not the next in time statement in a history, as previously argued above.

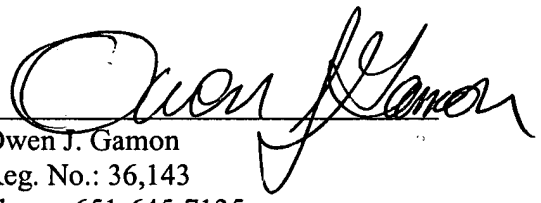
Thus, Sapia does not teach or suggest all the elements of claim 1.

Independent claims 6, 11, and 16 include similar elements as argued above for claim 1 and are patentable over Sapia for similar reasons. Claims 2, 7-9, 12-14, 17, and 20 are dependent on claims 1, 6, 11, and 16, respectively, and are patentable for the reasons argued above, plus the elements in the claims.

Conclusion

Appellant respectfully requests reversal of the above rejections. If the Board is of the opinion that any rejected claim may be allowable in amended form, then appellant also respectfully requests a statement to that effect.

Respectfully submitted,

Date February 26, 2008 By 

Owen J. Gamon
Reg. No.: 36,143
phone: 651-645-7135
fax: 651-457-5622

IBM Corporation
Intellectual Property Law
Dept. 917, Bldg. 006-1
3605 Highway 52 North
Rochester, MN 55901

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Name Owen J. Gamon Signature 

8. CLAIMS APPENDIX

1. A method comprising:

finding a correlation between a first statement and a previous statement, wherein the finding the correlation further comprises finding a host variable in the previous statement in a history that matches a host variable in the first statement, wherein first data supplied for the host variable in the first statement matches previous data associated with the host variable in the previous statement, wherein the host variable in the previous statement and the host variable in the first statement comprise a variable in a host language that is set to a plurality of values in succession and submitted to a database;

predicting a second statement based on the previous statement, wherein the predicting further comprises finding the previous statement in the history and finding the second statement that was next in time following the previous statement in the history, wherein the previous statement and the second statement comprise commands that were previously executed against the database; and

retrieving at least one page from the database based on the second statement, wherein the retrieving further comprises executing the second statement against the database.

2. The method of claim 1, wherein the retrieving further comprises:

retrieving the at least one page asynchronously from executing the first statement against the database; and

storing the at least one page in a cache.

6. An apparatus comprising:

means for finding a correlation between a first statement and a previous statement, wherein the previous statement is stored in a history of a plurality of statements, wherein the finding the correlation further comprises finding a host variable in the previous statement in the history that matches a host variable in the first statement, wherein first data supplied for the host variable in the first statement matches previous data associated with the host variable in the previous statement, wherein the host variable in the previous statement and the host variable in the first statement comprise a variable in a host language that is set to a plurality of values in succession and submitted to a database;

means for predicting a second statement based on the previous statement, wherein the means for predicting further comprises means for finding the second statement that was next in time following the previous statement in the history, wherein the previous statement and the second statement comprise commands that were previously executed against the database; and

means for retrieving at least one page from the database based on the second statement, wherein the means for retrieving further comprises means for executing the second statement against the database.

7. The apparatus of claim 6, further comprising:

means for saving the first statement in the history.

8. The apparatus of claim 6, wherein the means for retrieving further comprises:

means for retrieving the at least one page asynchronously from executing the first statement against the database; and

means for storing the at least one page in a cache.

9. The apparatus of claim 8, further comprising:

means for executing a next statement against the cache, wherein the next statement follows the first statement in time, and wherein a host variable in the next statement matches the host variable in the second statement.

11. A storage device encoded with instructions, wherein the instructions when executed comprise:

finding a correlation between a first statement and a previous statement, wherein the previous statement is stored in a history of a plurality of statements, wherein the finding the correlation further comprises finding a host variable in the previous statement in the history that matches a host variable in the first statement, wherein first data supplied for the host variable in the first statement matches previous data associated with the host variable in the previous statement, wherein the host variable in the previous statement and the host variable in the first statement comprise a variable in a host language that is set to a plurality of values in succession and submitted to a database;

predicting a second statement based on the previous statement, wherein the predicting further comprises finding the second statement that was next in time following the previous statement in the history, wherein the previous statement and the second statement comprise commands that were previously executed against the database;

executing the first statement against the database; and

retrieving at least one page from the database based on the second statement, wherein the retrieving further comprises executing the second statement against the database.

12. The storage device of claim 11, wherein the retrieving further comprises:

retrieving the at least one page asynchronously from the executing the first statement.

13. The storage device of claim 11, further comprising:

storing the at least one page in a cache.

14. The storage device of claim 13, further comprising:

executing a next statement against the cache, wherein the next statement follows the first statement in time, and wherein a host variable in the next statement matches the host variable in the second statement.

16. A server comprising:

a processor; and

a storage device encoded with instructions, wherein the instructions when executed on the processor comprise:

finding a correlation between a first statement and a previous statement, wherein the previous statement is stored in a history of a plurality of statements, and wherein the finding the correlation further comprises finding a host variable in the previous statement in the history that matches the host variable in the first statement, wherein first data supplied for the host variable in the first statement matches previous

data associated with the host variable in the previous statement, wherein the host variable in the previous statement and the host variable in the first statement comprise a variable in a host language that is set to a plurality of values in succession and submitted to a database,

predicting a second statement based on the previous statement, wherein the predicting further comprises finding the second statement that was next in time following the previous statement in the history, wherein the previous statement and the second statement comprise commands that were previously executed against the database,

executing the first statement against the database,

retrieving at least one page from a database based on the second statement, wherein the retrieving further comprises executing the second statement against the database,

storing the at least one page in a cache, and

executing a next statement against the at least one page in the cache, wherein the next statement follows the first statement in time, and wherein the host variable in the next statement matches the host variable in the second statement.

17. The server of claim 16, wherein the retrieving further comprises:

retrieving the at least one page asynchronously from the executing the first statement.

20. The server of claim 16, wherein the finding the correlation further comprises:

finding the previous statement, wherein the previous statement is associated with a same job as the first statement.

9. EVIDENCE APPENDIX

None.

10. RELATED PROCEEDINGS APPENDIX

None.